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This standard covers the sanitation requirements for equipment and/or devices used in the storage, preparation, or handling of foods and beverages. The National Sanitation Foundation's basic criteria for the evaluation of special equipment and/or devices has been prepared to fulfill several specific needs, its major function being to serve as a glossary of words, terms and requirements commonly used in NSF standards relating to food equipment thereby providing for uniformity of requirements and interpretation . It also serves to establish a basic format for all NSF standards which in turn establishes broad basic requirements for food equipment not covered in a specific NSF standard. (RH)

Special Equipment and Devices

BASIC CRITERIA FOR THE EVALUATION OF SPECIAL EQUIPMENT AND/OR DEVICES

ED021430

EFFECTIVE JULY 1960

Reprinted as Amended April, 1966

NATIONAL SANITATION FOUNDATION

NUMBER C-2

PREPARED BY THE JOINT COMMITTEE ON FOOD EQUIPMENT STANDARDS

SEAL OF APPROVAL

To identify equipment that has met
NSF Basic Criteria C-2
Special Equipment and/or Devices

(Colors: blue, gray and white.)

NATIONAL SANITATION FOUNDATION

Basic Criteria Number 2

SPECIAL EQUIPMENT AND/OR DEVICES

As Revised By

THE JOINT COMMITTEE ON FOOD EQUIPMENT STANDARDS

Reprinted as Amended
April 1965

Published by

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This is one of a series of nationally uniform sanitation standards and criteria established by the National Sanitation Foundation.

Current Standards and Criteria include:

No. 1	Soda Fountain and Luncheonette Equipment
No. 2	Food Service Equipment
No. 3	Spray-Type Dishwashing Machines
No. 4	Commercial Cooking and Warming Equipment
No. 5	Commercial Hot Water Generating Equipment
No. 6	Dispensing Freezers
No. 7	Commercial Refrigerators and Storage Freezers
No. 8	Commercial Powered Food Preparation Equipment
No. 9	Diatomite Type Filters for Swimming Pool Equipment
No. 10	Sand Type Filters for Swimming Pool Equipment
No. 11	Recessed Automatic Surface Skimmers
No. 12	Automatic Ice Making Equipment
No. 14	Thermoplastic Materials, Pipe, Fittings, Valves, Traps and Joining Materials
No. 15	Thermoset Plastic Pipe, Fittings, Valves, Tanks, Appurtenances, Joining Materials, & Thermoset Plastic Coatings for Use in Potable Water Supply Systems
No. 16	Film Badge Services
C-1	Vending Machines
C-2	The Evaluation of Special Equipment and/or Devices
C-3	Thermoset Reinforced Plastic
C-4	Reinforced Plastic Tanks
C-5	Cartridge Type Filters
C-6	Cloth Towel Dispensers
C-7	Plastic Lined Pipe
C-8	Pitless Well Adapters

The National Sanitation Foundation

Purpose and Organization

IN 1944, A SMALL GROUP of industrial and public health leaders were discussing mutual problems involving sanitation. They realized that more solutions to modern sanitation problems affecting industry and the public health could be developed through mutual understanding and cooperative action than through ordinances, inspections and law enforcement alone.

It occurred to them that great strides could result from the creation of an independent but authoritative liaison organization which would be a clearing house through which business and industry and health authorities could work together for the solution of their common problems and for the common good.

They foresaw that, through such an organization, they could jointly seek new facts in sanitary science to bring it up to date with technological advances of industry and with modern problems of the health officer in the field.

They could sponsor educational programs and sanitation services which would win everyone's cooperation in a nation-wide program designed to promote superior sanitation in modern products and services, and in the daily lives of the people.

Thus was born the National Sanitation Foundation. The Foundation is a non-profit, non-commercial organization seeking solutions to all problems involving cleanliness. It is dedicated to the prevention of illness, the promotion of health and the enrichment of the quality of American living through the improvement of the physical, biological and social environment in which we live today.

Distinguished representatives of the public health profession, of business and industry, and of the public serve on its Board of Trustees, Council of Public Health Consultants, Industrial Advisory Board and various committees.

The National Sanitation Foundation is endorsed by health agencies, both official and voluntary. More than 350 industrial and business firms have contributed nearly three quarters of a million dollars to its support. The Foundation is now in its twenty-second year of operation.

PREFACE

This Criteria, relating to Special Equipment and/or Devices, is one in a series of N.S.F. Standards. These Standards are issued in recognition of the long-felt need for a common understanding of the problems of sanitation involving industry and administrative health officials whose obligation it is to enforce regulations.

Sanitation in the United States, or in any country, can be as good or as bad as:

1. The people who work at it; i.e., sanitation personnel
2. The joint effort of public health, industry, and business
3. The education, or the understanding, of the public

It is a mistake to think of any one of the three factors as more or less important than the other—as much a mistake as saying that ignition is more or less important than carburetion in the operation of an engine. How the three factors are developed and coordinated will determine the success or failure of national, state, and local efforts to improve sanitation.

The National Sanitation Foundation offers the key to securing the much needed uniformity in the field of sanitation. The aim also is to improve environmental health as well as sanitation.

This revised Standard has gone through many drafts during the years of its preparation and use. It is the result of considerable study on the part of health men, consultations with technical representatives of industry, and field investigations of the National Sanitation Foundation's staff.

The improvement of environmental health and sanitation and the establishment of uniform requirements have been the primary aim in the preparation of this material. It is recognized that continued scientific progress will require changes in Standards over long periods.

The adoption of these Standards offers health officials an opportunity to present a united front in securing the basic equipment to make safe and clean food service possible as demanded by the

general public. It gives users of such equipment the assurance of meeting health standards and passing inspection. Also, this gives manufacturers the advantage of applying uniform construction methods with confidence that equipment conscientiously built to meet these Standards will be generally acceptable.

Finally, as an aid to all concerned in recognizing approved equipment, the National Sanitation Foundation has established a policy under which the use of its insigne, nSf, will be authorized on equipment of types that meet the standards herein established for Food Service Equipment and Appurtenances.

Permission to use the National Sanitation Foundation Seal of Approval will be granted only after an investigation of the applicant's manufacturing methods and, where deemed necessary, tests of equipment show compliance with the Standard. Continuance of the agreement is dependent upon continued evidence of compliance with the Standard upon periodic re-examination of equipment in factory and field.

Our sincere appreciation is extended to all members of the Committees herein listed who willingly devote their time to the development of this and other Standards. Special credit and thanks are due the members of the Joint Committee on Food Equipment Standards for the long hours spent in review, discussion and correspondence as well as to the Industry Advisory Committee for its untiring efforts through the years in which this work has been in progress.

Henry F. Vaughan, Dr.P.H., President
The National Sanitation Foundation

INTRODUCTION

NSF Basic Criteria C-2 for the Evaluation of Special Equipment and/or Devices has been prepared by the NSF Joint Committee on Food Equipment Standards to fulfill several specific needs. Its major function being to serve as a glossary of words, terms and requirements commonly used in NSF Standards relating to food equipment, thereby, providing for uniformity of requirements and interpretation. Secondly, it serves to establish a general format for all NSF Standards and Criteria. Lastly, this Criteria establishes broad basic requirements for food equipment which are not specifically covered by a specific NSF Standard and for which a Standard is impractical due to the equipment's special nature, its limited production or its variation in operation, basic concept or design. This Criteria provides in this connection, that all applicable requirements of other existing NSF Standards and Criteria shall become a part of this Basic Criteria *whenever the special equipment or device is intended* to perform a function or operation, normally performed by equipment covered by said other Standard or Criteria. This provision assures a uniformity of requirements based on end use requisites.

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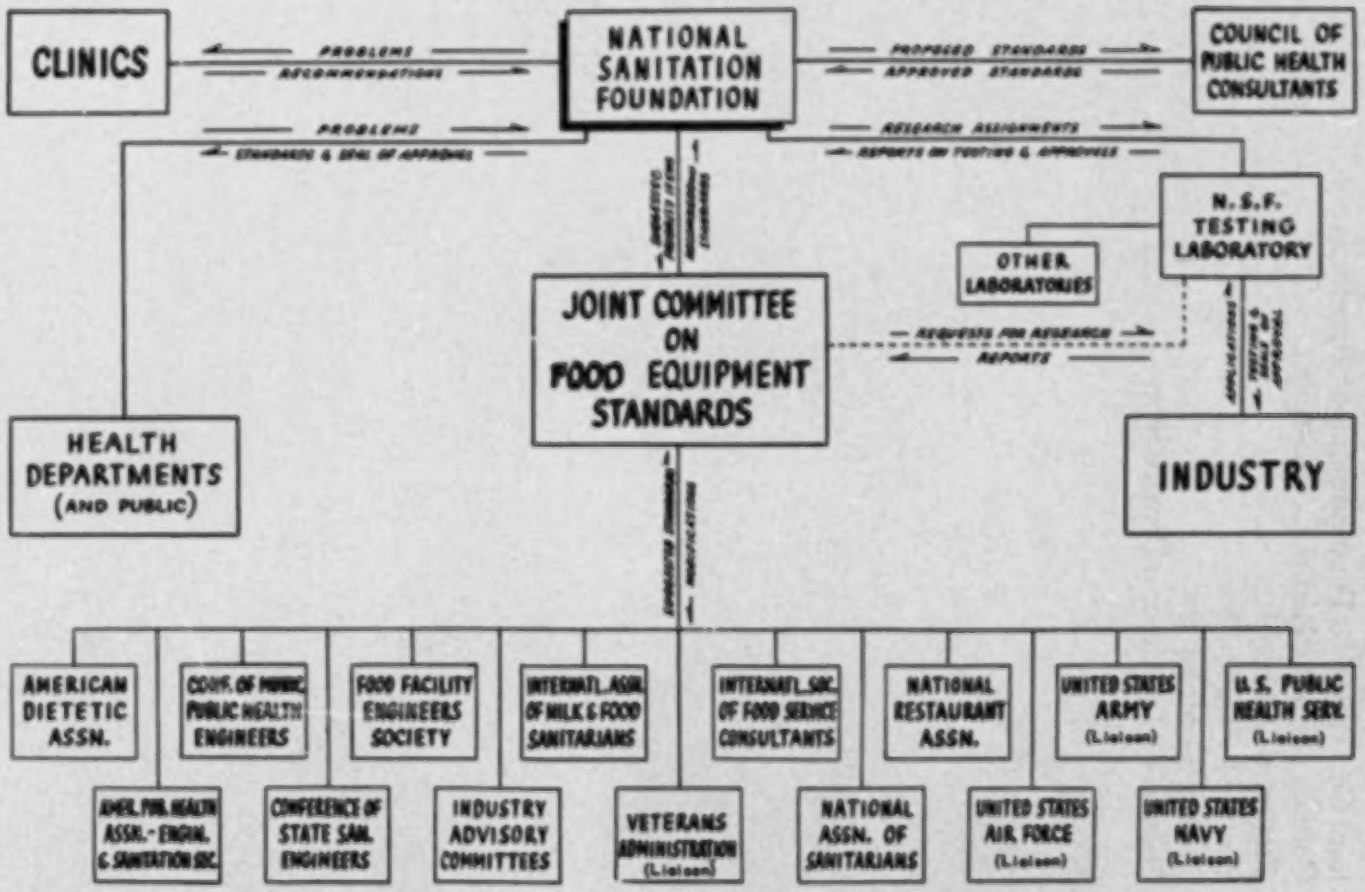
ORGANIZATION CHART
NATIONAL SANITATION FOUNDATION PROGRAM
FOR STANDARDIZING, TESTING AND APPROVING EQUIPMENT



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NATIONAL SANITATION FOUNDATION

BASIC CRITERIA

C-2

for

THE EVALUATION OF SPECIAL EQUIPMENT AND/OR DEVICES

1. GENERAL PROVISIONS

1.00 COVERAGE: These Basic Criteria cover the sanitation requirements for equipment and/or devices used in the storage, preparation, or handling of foods and beverages. All applicable provisions contained herein and such additional specific requirements or exceptions as might be needed for proper appraisal shall constitute criteria for evaluation of devices or items of equipment for which individual Standards cannot practically be developed.

1.01 MINIMUM REQUIREMENTS: These are minimum requirements and variations may be permitted when they tend to make units more resistant to wear, corrosion, or more easily cleanable. Units which have components, or parts, which are covered under existing NSF Standards or Criteria, shall comply with the applicable requirements thereof.

1.02 ALTERNATE MATERIALS: Whenever specific materials are mentioned, it is understood that the use of materials proven to be equally satisfactory from the standpoint of sanitation and protection of product may be permitted.

1.03 PRINCIPLES OF OPERATION: Equipment and/or devices differing in the principle of operation or in operational requirements established in other NSF Standards or Criteria may qualify under this Criteria, provided comprehensive tests and investigations indicate that said equipment and/or devices produce results at least equivalent to those produced by equipment complying with said other Standard or Criteria. Such equipment and/or devices shall meet the requirements for materials, finishes, fabrication and cleanability of the applicable Standard or Criteria. In such instances the National Sanitation Foundation's Joint Committee for Food Equipment Standards shall be appraised of the details of the operational differences and proposed evaluation protocol prior to the evaluation of the equipment or devices.

2. DEFINITIONS

2.00 ACCESSIBLE: Accessible shall mean readily exposed for proper and thorough cleaning and inspection with the use of only simple tools such as a screw driver, pliers, or open-end wrench.

2.001 READILY ACCESSIBLE: Readily accessible shall mean exposed or easily exposed without the use of tools for proper and thorough cleaning and visual inspection.

2.01 CLEANING: The term cleaning shall mean the physical removal of residue of dirt, dust, foreign material or other soiling ingredients or materials.

2.011 READILY (OR EASILY) CLEANABLE. Readily (or easily) cleanable shall mean readily accessible and of such material, finish and so fabricated that soil may be effectively removed by normal cleaning methods.

2.02 CLOSED: Spaces required to be "closed" shall have no openings large enough for the entrance of insects or rodents. An opening of 1/32 inch or less shall be considered closed.

2.03 CORROSION-RESISTANT: "Corrosion-resistant" materials are those which maintain their original surface characteristics under prolonged influence of the foods to be contacted, the normal use of cleaning compounds and bactericidal solutions, and other conditions of the use environment.

2.04 FOOD: Shall mean any raw, cooked, or processed edible substance, beverage, or ingredient used or intended for use or for sale in whole or in part for human consumption.

2.05 REMOVABLE: Removable shall mean capable of being taken away from the main unit with the use of only simple tools such as a screw driver, pliers, or open-end wrench.

2.051 READILY (OR EASILY) REMOVABLE: Readily (or easily) removable shall mean capable of being taken away from the main unit without the use of tools.

2.06 SANITIZING: Sanitizing shall mean the effective bactericidal treatment of clean surfaces of equipment and utensils by a process which has proven effective.

2.07 SEALED: Spaces required to be "sealed" shall have no openings that will permit the entry of insects, rodents, dirt or moisture seepage.

2.08 SMOOTH: The word "smooth" is used to define a surface free of pits and inclusions and having a cleanability equal to the following:

Food Zone: Number 3 (100 grit) finish on Stainless Steel

Splash and Non-Food Zone: Commercial grade hot rolled steel free of visible scale.

2.09 TOXIC: The word "toxic" shall refer to the adverse physiological effect to man.

2.10 ZONES (CONTACT SURFACES):

2.101 FOOD ZONE: The term "food zone" or "food contact surfaces" includes those surfaces of the equipment with which the food normally comes in contact, and those surfaces with which the food is likely, in normal operation, to come into contact and drain back onto surfaces normally in contact with the food or into the food.

2.102 SPLASH ZONE: The terms "splash zone" or "splash contact surfaces" shall mean those surfaces, other than food contact surfaces, which are subject to routine splash, spillage, and contamination during normal use.

2.103 NON-FOOD ZONE: The terms "non-food zone" or "non-food contact surface" shall mean all exposed surfaces not in the food and splash zones.

3. MATERIALS

3.00 GENERAL: Only such materials shall be used in the construction of special equipment and/or devices as will withstand normal wear, penetration of vermin, the corrosive action of foods, cleaning compounds and such other elements as may be found in the use environments and which will not impart an odor, color or taste to the product.

3.01 FOOD CONTACT SURFACES: Surface materials in the food zone shall be smooth, corrosion-resistant, non-toxic, stable, and non-absorbent under use conditions and shall not impart odors, color or taste nor contribute to the adulteration of food.* Exposed surfaces in the food zone shall be finished so as to be easily cleanable. Paint shall not be used.

3.02 SPLASH CONTACT SURFACES: Splash contact surfaces shall be smooth, easily cleanable and corrosion resistant materials, or shall be rendered corrosion-resistant with a material which is non-cracking, non-chipping and non-spalling. Lead based paint shall not be used.

3.03 NON-FOOD CONTACT SURFACES: Non-food contact surfaces shall be smooth and of corrosion-resistant material or shall be rendered corrosion-resistant or painted. Lead based paints shall not be used. Parts directly over and adjacent to the food zone and parts having both food contact and non-food contact surfaces shall have non-food contact surfaces rendered corrosion-resistant and if coated, the coating shall be of a non-cracking, non-chipping and non-spalling type.

3.04 WELDING: When welded seams are used, the weld area and deposited weld material shall meet the applicable corrosion-resistant requirements.

3.05 GASKETS: Gasket materials shall be non-toxic, stable under use conditions, odor-free, non-absorbent and shall be unaffected by the foods or by normal cleaning methods.

3.06 CUTTING BOARDS: Cutting boards shall be of hard maple or other approved materials.

3.07 SOLDER:

3.071 SOFT SOLDER, when used as a food-contact surface shall be of such formulation as to be non-toxic under use conditions; shall contain at least 50% tin; shall contain no more lead than is necessary under good solder manufacturing practice; and shall, consistent with good industrial practice in the refining

*The requirements of the Federal Food, Cosmetics and Drug Act, as amended, shall be used as a general guide.

of its constituent elements, be free of cadmium, antimony, bismuth and other toxic materials. Other solders may be accepted, under the provisions of Item 1.02, if they are demonstrated to be non-toxic under use conditions.

3.072 HARD SOLDER (silver solder) when used as a food-contact surface, shall be of such formulation as to be non-toxic under use conditions; shall be corrosion-resistant; and shall, consistent with good industrial practice in the refining of its constituent elements, be free of cadmium, antimony, bismuth and other toxic materials. Other solders may be accepted under the provisions of Item 1.02, if they are demonstrated to be non-toxic under use conditions.

3.08 PLASTIC RESIN SYSTEM: Plastic resin systems may be used provided they meet the applicable requirements of 3.00, 3.01, 3.02 and 3.03.

3.09 SOUND DAMPING MATERIALS: Sound damping materials shall when applied, comply with material requirements of the zone in which used.

4. DESIGN AND CONSTRUCTION

PRODUCT CONTACT SURFACES:

4.00 GENERAL DESIGN AND CONSTRUCTION: Special equipment, and/or devices shall be designed and constructed in such a manner as to exclude such vermin, dust, dirt, splash or spillage from the food zone as may be encountered under the intended use conditions, and to be easily cleaned, maintained and serviced.

4.01 CLEANABILITY: All food contact surfaces shall be readily accessible and easily cleanable, either in an assembled position or when removed. Demountable parts shall be readily removable.

4.011 In equipment of such design that food contact surfaces are not readily removable and in-place cleaning is intended, tubing, pipe fittings, and valves shall be so arranged that cleaning and bactericidal solutions can be circulated under pressure throughout the fixed system. Such solutions shall contact all interior surfaces. The system shall be self-draining or otherwise completely evacuated, and the manufacturers' recommended

cleaning procedures shall result in thorough cleaning of the equipment. Special equipment or devices designed for cleaning-in-place shall have a section of the line cleaned-in-place accessible for inspectional purposes or other inspectional method provided.

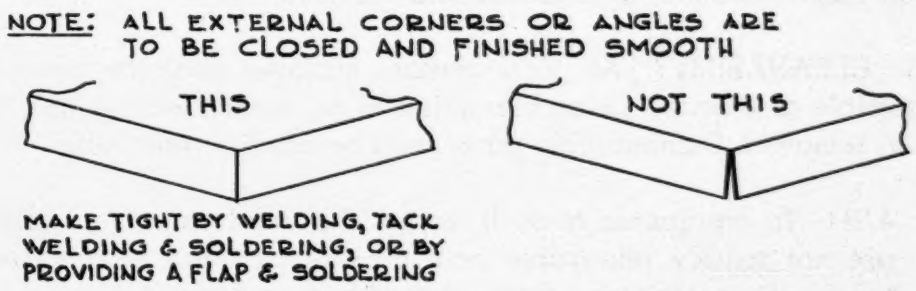
4.02 FUNCTION: Special equipment and/or devices shall be designed and constructed so that ingredients or food(s) can be added and the finished food dispensed, removed or served in a sanitary manner.

4.03 INTERNAL CORNERS OR ANGLES OF FOOD CONTACT SURFACES: An internal angle formed by the intersection of surfaces at 135 degrees or less which is to be manually cleaned shall have a minimum continuous and smooth radius of $\frac{1}{8}$ inch.

4.031 LESSER RADII: Lesser radii may be used where necessary for proper functioning of parts (such as sealing ring grooves, holes, or grooves), provided that they can be readily cleaned.

4.032 GREATER RADII: Greater radii may be required where cleaning, product flow and maintenance requirements indicate.

4.04 EXTERNAL CORNERS AND ANGLES OF FOOD CONTACT SURFACES: All external corners and angles in the food zone shall be sealed, smooth as the surfaces being joined, and formed with sufficient radii to eliminate sharp edge(s) which might be an accident hazard to interfere with proper drainage.


NOTE: ALL EXTERNAL CORNERS OR ANGLES ARE TO BE CLOSED AND FINISHED SMOOTH
THIS
NOT THIS
MAKE TIGHT BY WELDING, TACK WELDING & SOLDERING, OR BY PROVIDING A FLAP & SOLDERING

4.04—Corners or Angles—External

4.05 JOINTS AND SEAMS: All joints and seams in the food zone shall be sealed and shall be as smooth as the surfaces being joined. Wherever feasible and practical, equipment parts in the food zone shall be stamped, extruded, formed or cast in one piece.

4.06 FASTENING METHODS: Exposed threads; bolt and rivet heads; nuts; and screws, projecting screws and studs, shall be eliminated from food contact surfaces. Provided, however, that:

(1) If exposed threads are used in the Food Zone, they shall be American Standard 60° Stub, or equal, and shall not have more than 8 threads per inch with a major diameter of not less than $\frac{5}{8}$ inches

(2) If unexposed threads are used in the Food Zone, they shall be American Standard 60° Stub or equal.

4.07 FINISHING: All food contact surfaces shall be smooth.

4.08 CUTTING BOARDS: All cutting boards shall be readily removable for cleaning and shall comply with the requirements of NSF Standard No. 2.

4.09 WORKED SURFACES: Food contact surfaces which during the course of fabrication are so worked as to reduce their corrosion-resistant characteristics, shall receive such additional treatment as is necessary to render, or return, them to a corrosion-resistant state.

4.10 SOLDERING: Whenever solder is used, it shall be securely bonded to the metal so that it will not crack or chip off and the surface shall be smoothed. Flux and catalytic material shall be neutralized and removed.

4.101 The use of "Soft Solder" shall be limited to use in joining metal or sealing seams between abutting metal surfaces.

SPLASH AND NON-FOOD CONTACT SURFACES:

4.11 GENERAL DESIGN AND CONSTRUCTION: All special equipment and/or devices shall be designed and constructed in such a

manner as to minimize the retention of moisture and dust, the shelter of vermin and dirt, and to facilitate inspection, servicing, maintenance and cleaning.

4.12 JOINTS AND SEAMS: In the splash zone, all joints and seams shall be sealed, except that joints may be made by overlapping sheets of metal in a vertical plane in such a manner as to eliminate dirt-catching horizontal ledges. Where exposed to seepage and condensation, all joints and seams of integral parts shall be sealed and made smooth by means of welding or soldering.

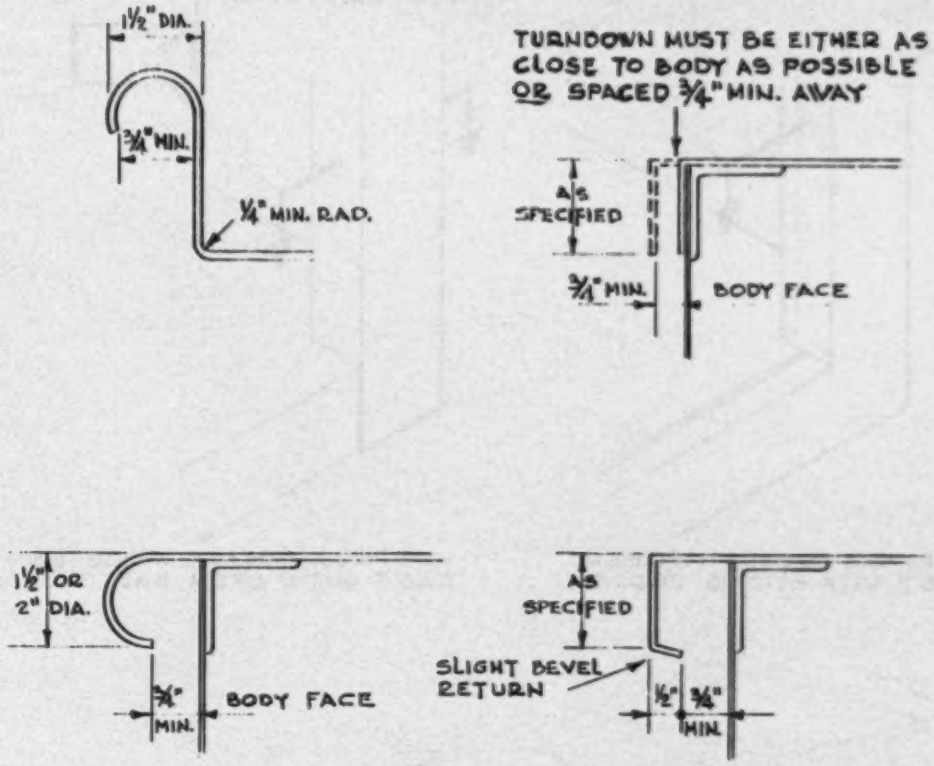
4.13 FASTENING METHODS: In the non-food zone, exposed threads, projecting screws and studs shall be used only when it has been demonstrated that other fastening methods are unpractical and they shall be eliminated from the Splash Contact Surfaces. Exposed rivet, screw or bolt heads in the splash zone shall be of low profile type such as brazier or modified brazier rivets or pan and oval screw and bolt heads.

4.131 INTERIOR FASTENINGS: In areas subject to cleaning, interior fastenings shall be accomplished in such a manner as to minimize projections, ledges and recesses.

4.14 FINISHING: Painted finishes may be used where they improve sanitation by preventing oxidation or condensation, but not on wearing surfaces. Non-wearing surfaces subject to corrosion, that require cleaning shall be rendered corrosion-resistant by plating or painting. Metal surfaces to be painted shall meet the materials specifications. Paint, when used, shall be of a type and so applied as to resist chipping, blistering and peeling. Lead paint shall not be used.

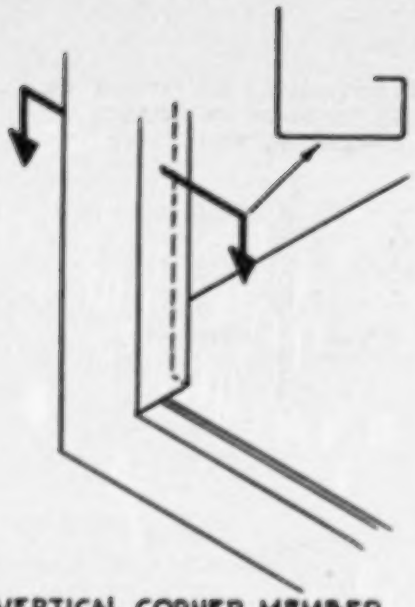
GENERAL:

4.15 EXPOSED EDGES AND NOSINGS: All exposed edges and nosings on horizontal surfaces shall be made integral with tops, regardless of profiles, and where exposed to fingers and cleaning, they shall be made smooth. Where the edges of tops or shelves are flanged down and turned back, the return under flange shall be angled down and the space between the top and the flange shall not be less than 3/4 of an inch, and the space between the sheared edge and the frame angle or cabinet body shall not be less than 3/4 of an inch to provide access for cleaning or shall be closed tight.

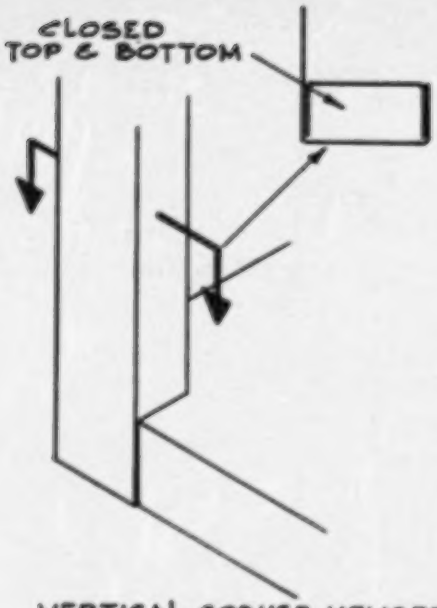


4.15—Exposed Edges and Nosings

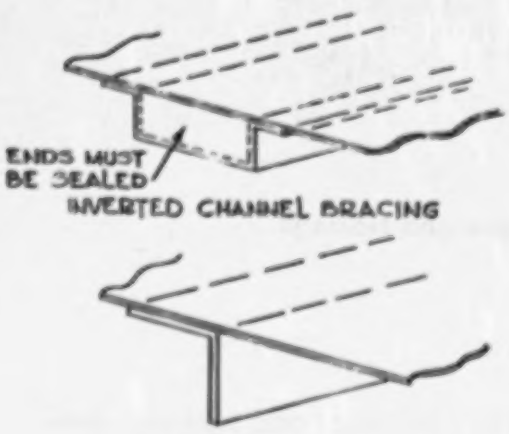
4.16 REINFORCING AND FRAMING: Reinforcing and framing members not totally enclosed, or within walls, are to be placed in such manner as to be easy to clean. All framing and reinforcing members shall be so placed as to eliminate harborage for vermin. The ends of all hollow sections of reinforcing and framing members shall be sealed. Horizontal angle reinforcing and gussets shall not be placed where food or garbage may accumulate thereon. Where angles are used horizontally, they shall have one leg turned down wherever the nature of the equipment permits, or shall be formed integral with the sides as for use with removable shelves or draw slides. All vertical channel sections shall be either completely closed or open to the floor.



VERTICAL CORNER MEMBER CAB'T WITH SLIDING DOORS



VERTICAL CORNER MEMBERS CAB'T WITH OPEN SHELF



ANGLE BRACING

CHANNEL BRACING

4.16—Reinforcing and Framing Members

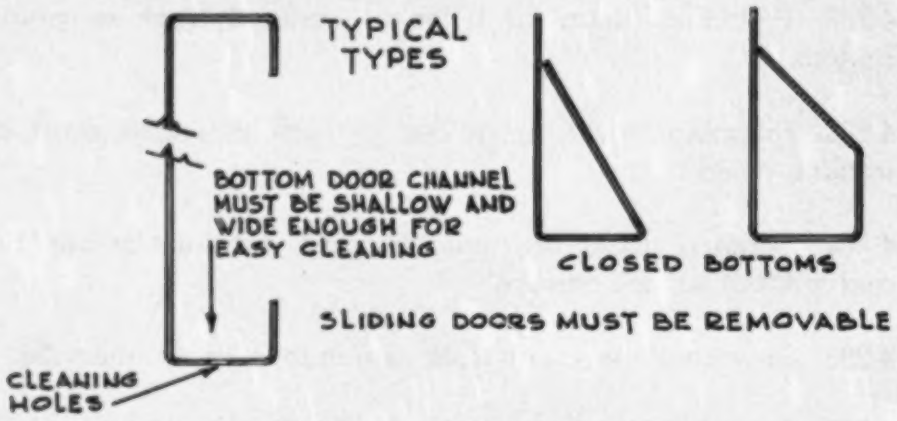
4.17 FIXED PANELS: Where fixed panels are applied to the outside or inside, or set into angle or other reinforced body or counter frames, the method of fastening shall be such as to minimize projections and openings.

4.18 REMOVABLE PANELS: Where necessary for inspection and maintenance, easily removable panels shall be provided. They shall be of adequate size to serve the purpose intended, but otherwise

confined in size and so constructed that one person can handle them. Removable panels shall conform with applicable construction requirements for the zone in which they are to be used.

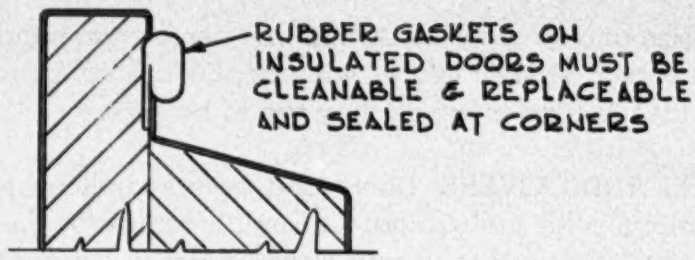
4.19 DOORS AND COVERS: Doors and covers shall be manufactured to conform with the standard of manufacture for the cabinet proper and shall be sized to fit and close properly. Metal doors and covers to enclose openings and provide access to interior compartment shall be fabricated in two basic types of construction, i.e., single or double panel. Sliding doors, when used, shall slide easily and freely and be readily removable. Hinges in the food or splash zone shall be easy to clean and of simple take-apart design and construction. Piano-type hinges are not perimssible in the food or splash zone.

4.191 SINGLE PANEL: Single panel construction shall be such as to minimize the collection of soil particles, spillage, and other foreign matter, and preferably without channel sections at the bottom. If channel sections are used, they shall be inverted or shall be shallow and wide enough to be easily cleanable and clean-out holes provided.


TYPICAL TYPES
BOTTOM DOOR CHANNEL MUST BE SHALLOW AND WIDE ENOUGH FOR EASY CLEANING
CLOSED BOTTOMS
SLIDING DOORS MUST BE REMOVABLE
CLEANING HOLES

4.191—Single Panel Doors

4.192 DOUBLE PANEL: Double panel construction shall be fabricated in such a manner as to minimize the collection of food particles, spillage and foreign matter thereon. Hollow sections of such doors shall be sealed. Vent openings into the hollow space may be provided when necessary, but when provided, they shall be effectively screened with a minimum of 16 mesh screen or equal against vermin and protected against the entrance of seepage or spillage.



4.192—Insulated Doors

4.20 TRACKS AND GUIDES: All tracks and guides for doors, covers and access panels shall be built in such a manner as to be easily cleaned and to minimize the collection of food particles, condensation, spillage and foreign matter. The following are examples of design features which are in compliance with this requirement:

4.201 Providing overhead door suspension with lower guides which are constructed integral with the bottom.

4.202 Providing clean-out holes at ends of track or guide bottom.

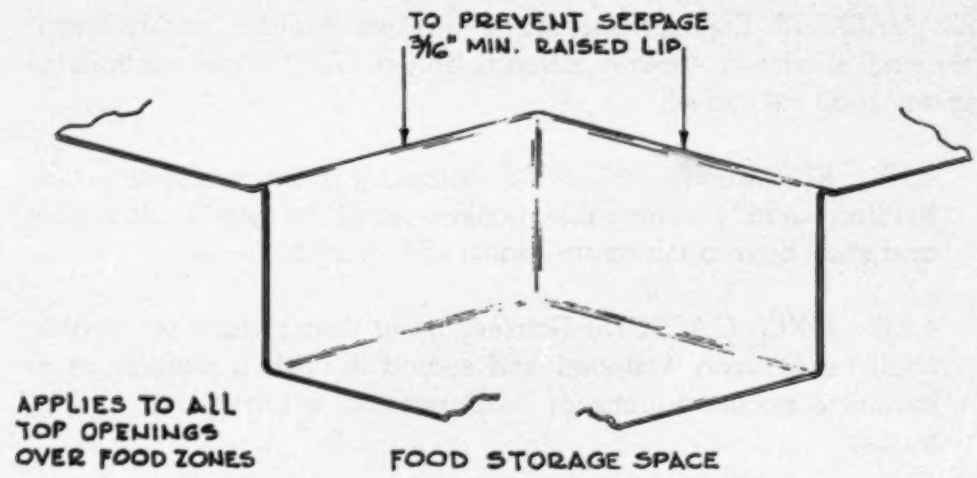
4.203 Stopping tracks or guides ½ inch minimum short of framing at each end.

4.204 Forming tracks or guides integral with interior bottoms and without square corners.

4.205 Providing clean-out slots, continuous or at intervals.

4.206 Providing readily removable T strips and/or cleanout holes in channel-type bottom tracks.

4.21 OPENINGS AND RIMS: To prevent seepage, all top openings over storage spaces and containers shall be protected by a raised rim at least 3/16 of an inch above the level to which liquids may accumulate.



4.22—Openings and Rims—Food Zone

4.22 OPENINGS TO FOOD ZONES: All openings to food zones shall be provided with covers or other equivalent protection to prevent contamination of the food. Such covering shall be effected in a manner to prevent seepage, condensation or spillage from entering food zones.

4.221 COVERS AND DOORS: When covers or doors are provided to prevent contamination from reaching the food zone, they shall be so designed as to provide a flange which overlaps the opening and shall be sloped to provide drainage from the cover surface. Any port opening through the covers shall be flanged upward at least 3/16 inch and shall be provided with a cover which overlaps the flange. Covers shall be designed with sufficient clearance to avoid contact with foods which they cover. All covers are to be readily removable as a unit or in sections. Hinges or pivots shall be designed to be easily cleaned and of simple take apart design and construction. Piano hinges are not permissible in the food zone. Sliding or hinged covers, where used, shall be constructed in such a manner as to prevent seepage of liquids, condensation or other foreign materials into the food zone and liquid or solid accumulations on covers from falling into the food zone when the covers are closed or opened.

4.222 ENTRY POINTS: All joints and seams where piping, thermometers, equipment, rotary shafts, and other functional parts extend into the food zones shall be closed and sealed at the point of entry or a properly designed deflecting apron provided.

4.23 GASKETS: Exposed surfaces of gaskets shall be readily cleanable and shall not contain internal angles. All hollow sections of gaskets shall be sealed.

4.231 RETAINING GROOVES: Retaining grooves or devices for holding readily removable gaskets shall be easily cleanable and shall have a minimum radius of 1/16 inch.

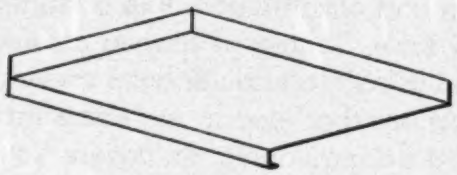
4.232 FIXED GASKETS: Gaskets, other than readily removable shall be securely fastened and sealed in such a manner as to minimize accumulations of condensation, spillage and foreign matter.

4.24 SHELVING: All shelving shall be constructed to be readily cleanable.

4.241 REMOVABLE SHELVES: Removable shelves shall be readily removable and sized to facilitate their handling by one person. Where shelves are used as removable false bottoms, the flanged corners are to be closed or sufficiently open to permit cleaning.

4.242 DIVERTING SHELVES: Shelves intended to prevent seepage shall have the back and ends turned up a minimum of 1 inch and corners and seams sealed.

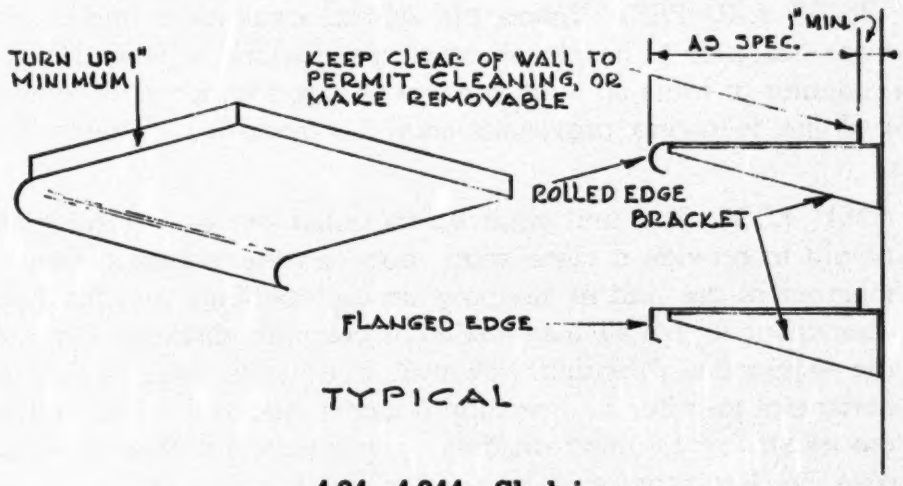
WHERE SHELVES ARE INTENDED TO PREVENT SEEPAGE, AS WHEN SET INTO INTERIORS - BACK & ENDS ARE TO TURN UP 1" MIN. - MADE WITH CLOSED CORNERS



WHERE SHELVES ARE EXPOSED TO UNPACKAGED FOOD - CORNERS ARE TO BE MADE TIGHT BY WELDING, WELDING AND SOLDERING, OR BY PROVIDING A FLAP AND SOLDERING, AND SHALL CONFORM TO ITEM 4.03 - CORNERS & ANGLES - INTERNAL

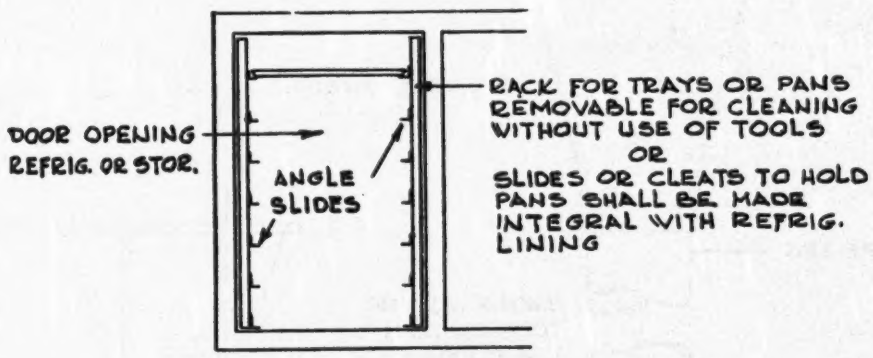
4.242—Diverting Shelves

4.243 FIXED SHELVING: Fixed shelving shall have the back and ends (where against side panels) turned up a minimum of I inch and closed throughout their length, **or** an open space of 1 inch provided between the shelf and back and/or side panels, **or** the resulting joint or seam sealed.



4.24 - 4.244—Shelving

4.244 SHELF BRACKETS: When removable and/or adjustable shelving is provided, the shelf support brackets or pilaster shall be readily removable or easily cleanable.


DOOR OPENING REFRIG. OR STOR.
ANGLE SLIDES
BACK FOR TRAYS OR PANS REMOVABLE FOR CLEANING WITHOUT USE OF TOOLS
OR
SLIDES OR CLEATS TO HOLD PANS SHALL BE MADE INTEGRAL WITH REFRIG. LINING

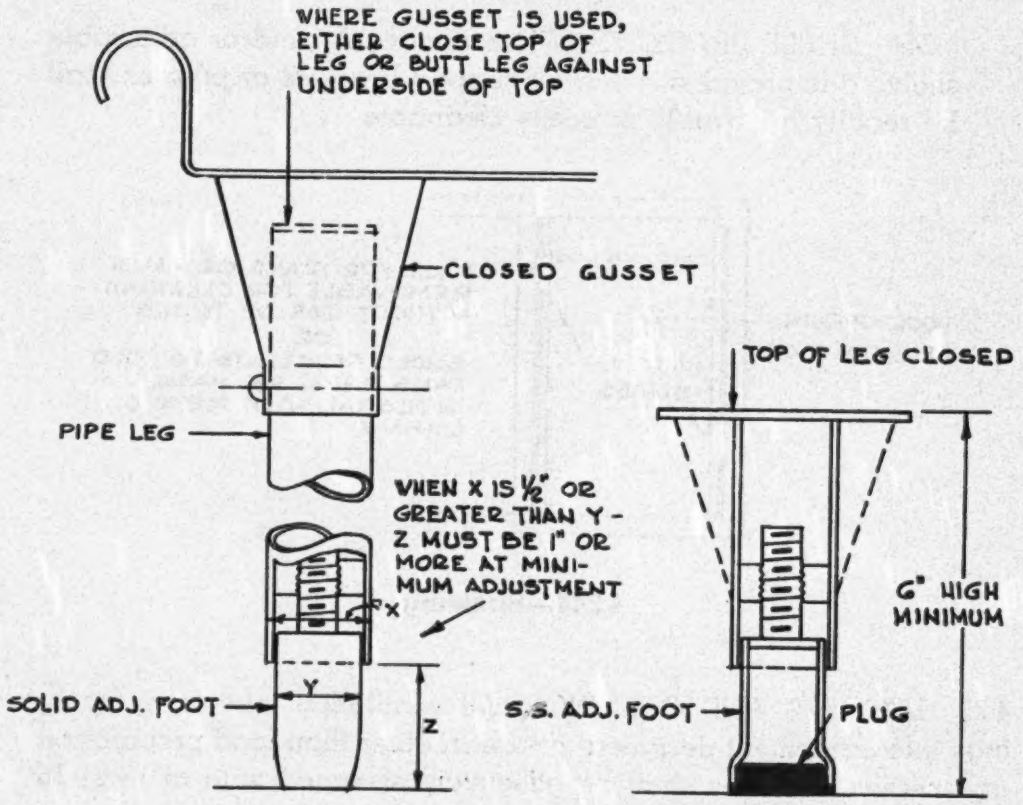
4.244—Shelving

4.25 LOUVERS AND OPENINGS: All ventilation louvers or openings into equipment designed for use in other than food preparation and service facilities shall be effectively screened with at least 16 mesh screening, or closed against insect and rodents. Such screens

shall be in a removable sash to facilitate cleaning and replacement. Compressor compartments, or similar enclosures, may be exempt from this requirement provided they are sealed from the product zone and readily accessible and cleanable. All louvers shall be of drip-proof construction.

4.26 LEGS AND FEET: Unless the special equipment and/or devices are designed to be placed on a raised island or sealed to the floor, counter or table so as to prevent seepage underneath, one or more of the following provisions shall be made for cleaning this area:

4.261 LEGS: The unit shall be mounted on legs of sufficient height to provide a clear space between the lowest horizontal member of the unit at cleaning access openings and the floor equivalent to 1/5 of the maximum cleaning distance beneath the equipment. Provided, however, in no case shall the lowest horizontal member be less than 6 inches above the floor unless the maximum cleaning distance is less than 6 inches in which case the clear space shall be not less than 4 inches, **or**


WHERE GUSSET IS USED, EITHER CLOSE TOP OF LEG OR BUTT LEG AGAINST UNDERSIDE OF TOP
CLOSED GUSSET
PIPE LEG
WHEN X IS 1/2" OR GREATER THAN Y - Z MUST BE 1" OR MORE AT MINIMUM ADJUSTMENT
X
Y
Z
SOLID ADJ. FOOT
TOP OF LEG CLOSED
6" HIGH MINIMUM
S.S. ADJ. FOOT
PLUG

4.261—Legs and Feet

4.27 CASTERS, ROLLERS, GLIDERS: The unit shall be mounted on casters, rollers, or gliders of design and construction as to permit its being easily moved by one person. Casters shall conform to the following additional requirements:

4.271 DESIGN: Casters shall be of such materials and construction as to provide sufficient rigidity and strength to support the equipment, the rated load, and shall be such as to permit the equipment on which it is installed to be rolled as required.

4.272 Casters and wheels shall be designed and constructed so as to be easily cleanable. Tread surfaces shall be smooth and shall be of proper width and design so as to preclude, insofar as possible, creasing, scoring, staining or breaking floor coverings. Exposed wheel surfaces facing the horn, excluding the hub area, shall be readily accessible.

4.273 Caster wheels shall be of non-spoke construction. Exposed bolt and screw heads on demountable rubber-tired type wheels shall be smooth and there shall be no exposed threads. The use of hex head bolts and acorn type nuts is permissible

4.274 All joints and seams on casters shall be closed; and joints and seams of permanently joined members shall be sealed.

4.275 There shall be not more than 2½ exposed threads on each end of axle bolts and such other threaded members not specifically covered elsewhere in these requirements. There shall be no washers used outside the horn assembly.

4.276 When the closest flat surface of the horn leg parallel to the wheel surface is 1 inch or less in width, a clearance of not less than ⅛ inch shall be provided between the sides of the wheel and the horn legs, excluding the hub area.

When the closest flat surface of the horn leg parallel to the wheel surface is greater than 1 inch in width, a clearance of not less than ¼ inch shall be provided between the sides of the wheel and the horn legs, excluding the hub area.

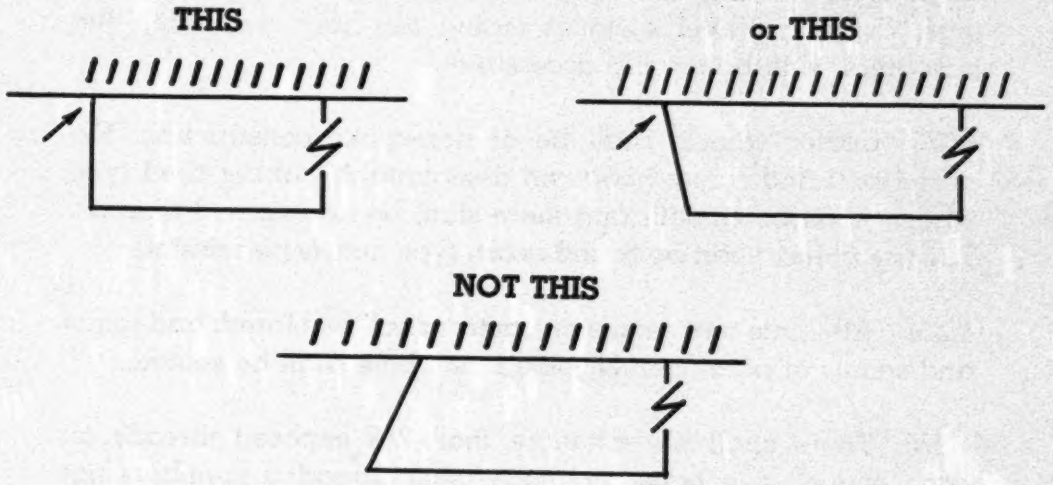
4.277 A clearance of ¼ inch shall be provided between the wheel tread and the horn assembly, provided, however, that for offset swivel type casters, the minimum clearance shall be ⅛ inch.

4.2771 Hooded type horns shall not be used.

4.278 Swivel raceways and wheel bearings shall be so constructed as to assure retention of the lubricant under normal cleaning and use conditions.

4.279 Commercial type grease fittings shall be acceptable when required for the lubrication of swivel raceways or wheel bearings.

4.280 The angle between the top surface and the edge of the plate shall be 90° or more as indicated in Figure 1. Mill stock and square sheared edges shall be considered acceptable.



4.280—Angle on Top Surface

4.281 Brakes and locking devices, when required, need not comply with the provisions for casters, **or**

4.29 PORTABLE: The unit shall be small enough and light enough to be easily moved by one person and shall comply with the following.

1) Not exceed 75 pounds in weight and have no dimension in excess of three feet in any one plane.

2) Have no utility connection; **or** have a connection that can be easily disconnected without tools; **or** have a flexible utility connection of sufficient length to permit the unit to be moved for cleaning.

4.30 COUNTER AND TABLE UNITS: Equipment other than portable designed to be placed on counters or tables shall conform to the provision of 4.232 or 4.233 or be designed to be sealed to the counter or to be mounted on legs of sufficient height to provide a clear space between the lowest horizontal member of the unit and the counter or table top equivalent to 1/6 of the maximum depth of the area to be cleaned or 4 inches whichever is greater. Provided, however, that in no case shall the leg height be less than 4 inches.

4.31 LEGS AND FEET—DESIGN AND CONSTRUCTION: Legs and feet shall be of sufficient rigidity to provide support with a minimum of cross-bracing and so fastened to the body of the equipment and so shaped at the floor contacts as to prevent the accumulation of dirt and the harborage of vermin. When the outside dimension of the leg is greater than the outside dimension of the foot, by ½ inch or more, in the same plane, the foot shall, at minimum adjustment, extend 1 inch below the leg. All openings between feet and legs, shall be drip-proof construction with no opening greater than 1/32 inch. All other openings to hollow sections shall be sealed. Legs and feet shall be of simple design and free from embellishments and exposed threads. Gussets, when used, shall be assembled in such a manner as to insure easy cleanability and to eliminate insect harborage. The resultant assembly shall have no recessed areas or spaces.*

4.32 TEMPERATURES AND CONTROLS:

4.321 Use Temperatures: Special equipment and/or devices shall be capable of maintaining the appropriate temperatures for the intended use.

4.322 CONTROLS: Automatic controls shall be provided to insure the maintenance of the selected temperatures at all times except when foods are being inserted or removed.

4.323 THERMOMETERS: If required, an approved type temperature sensing or indicating device shall be provided for each temperature zone of the unit. Such devices shall have an accuracy of ±2° F. at the critical range, shall be of an easy-to-

*The intent of this provision is to eliminate the uncleanable areas, generally encountered when open style gussets are used with cylindrical legs.

read type and so located as to be readily visible to persons using the equipment. The sensitizing element of the device shall be easily cleanable and so located as to reflect the representative temperature in the appropriate temperature zone.

4.33 GUARDS: Protection shall be provided against the entrance into the foods of broken glass, metal and similar contaminants from fixtures and devices within the equipment.

4.34 WATER AND WASTE CONNECTIONS: Special equipment and/or devices shall, when applicable, comply with the requirements of the American Standards Association pertaining to water and waste connections. National Plumbing Code (ASA-A40.81955).

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SANITATION is a way of life. It is the quality of living that is expressed in the clean home, the clean farm, the clean business and industry, the clean neighborhood, the clean community. Being a way of life it must come from within the people; it is nourished by knowledge and grows as an obligation and an ideal in human relations.

THE NATIONAL SANITATION FOUNDATION

Spes Hominum

***THE HOPE OF MANKIND** rests in the ability of man to first define and then seek out the environment which will permit him to live with his fellow man in health, in peace and in mutual respect.*